500222

FLOOD INSURANCE STUDY

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VILLAGE OF ALBURG, VERMONT
GRAND ISLE COUNTY

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SEPTEMBER 16, 1980

FEDERAL EMERGENCY MANAGEMENT AGENCY
FEDERAL INSURANCE ADMINISTRATION

COMMUNITY NUMBER - 500222

FEMA 209

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FLOOD INSURANCE STUDY
VILLAGE OF ALBURG, VERMONT

1.0 INTRODUCTION

1.1 Purpose of Study

The purpose of this Flood Insurance Study is to investigate the existence and severity of flood hazards in the Village of Alburg, Grand Isle County, Vermont, and to aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Initial use of this information will be to convert Alburg to the regular program of flood insurance by the Federal Insurance Administration (FIA). Further use of the information will be made by local and regional planners in their efforts to promote sound land use and flood plain development.

1.2 Coordination

An initial meeting on April 12, 1978, between representatives of the FIA, Dufresne-Henry (the study contractor), and the village was held to determine the areas to be studied by detailed and approximate methods. The Vermont Department of Water Resources and the Franklin County Regional Planning Commission were notified of the study, and a request was made for any pertinent information. The U. S. Department of Interior, Fish and Wildlife Service, was contacted to obtain available topographic mapping of the detailed study area.

The community provided data concerning flood hazards, flooding experience, plans to avoid potential flood hazards, and any other data deemed appropriate. Periodic contacts were made with local community officials to keep them informed of the progress of the study and to solicit pertinent information. The State of Vermont forwarded information concerning flood elevations on Lake Champlain. The FIA also conducted a meeting on November 10, 1976 on Lake Champlain study methods in Montpelier, Vermont. An intermediate meeting between officials of the Village of Alburg and the study contractor was held on April 26, 1979.

A final meeting, attended by representatives of the FIA, the community, and the study contractor, was held on July 10, 1979, to resolve any problems or conflicts with the results of this study and to provide an opportunity for local community officials to become familiar with the planning material provided.

1.3 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968, as amended.

The hydrologic and hydraulic analyses for this study were prepared by Dufresne-Henry Engineering Corporation for the Federal Insurance Administration, under Contract No. H-4751. This work, which was completed in March 1979, covered all significant flooding sources in the Village of Alburg.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Village of Alburg, Grand Isle County, Vermont. The area of study is shown on the Vicinity Map (Figure 1).

A detailed study was performed for that portion of Lake Champlain which lies within the boundaries of the Village of Alburg. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction for the next five years, through March 1984.

2.2 Community Description

The Village of Alburg is entirely surrounded by the Town of Alburg, which lies in northern Grand Isle County, in northwestern Vermont. The village is situated in the northwest portion of the town.

The town and village had an estimated population in 1975 of 1,323, a 4-percent increase over the 1970 population (Reference 1). About 55 percent of the combined population lives within the village, and the remaining 45 percent resides in the town.

The climate of this region is influenced by Lake Champlain and the adjacent barrier ranges, the Green Mountains and the Adirondacks. Lake Champlain has a significant moderating effect on the climate, extending the growing season to 160 days. The weather patterns are affected by the Green Mountains and the Adirondacks, along with some influence from the Taconic Mountains to the south. The valley is

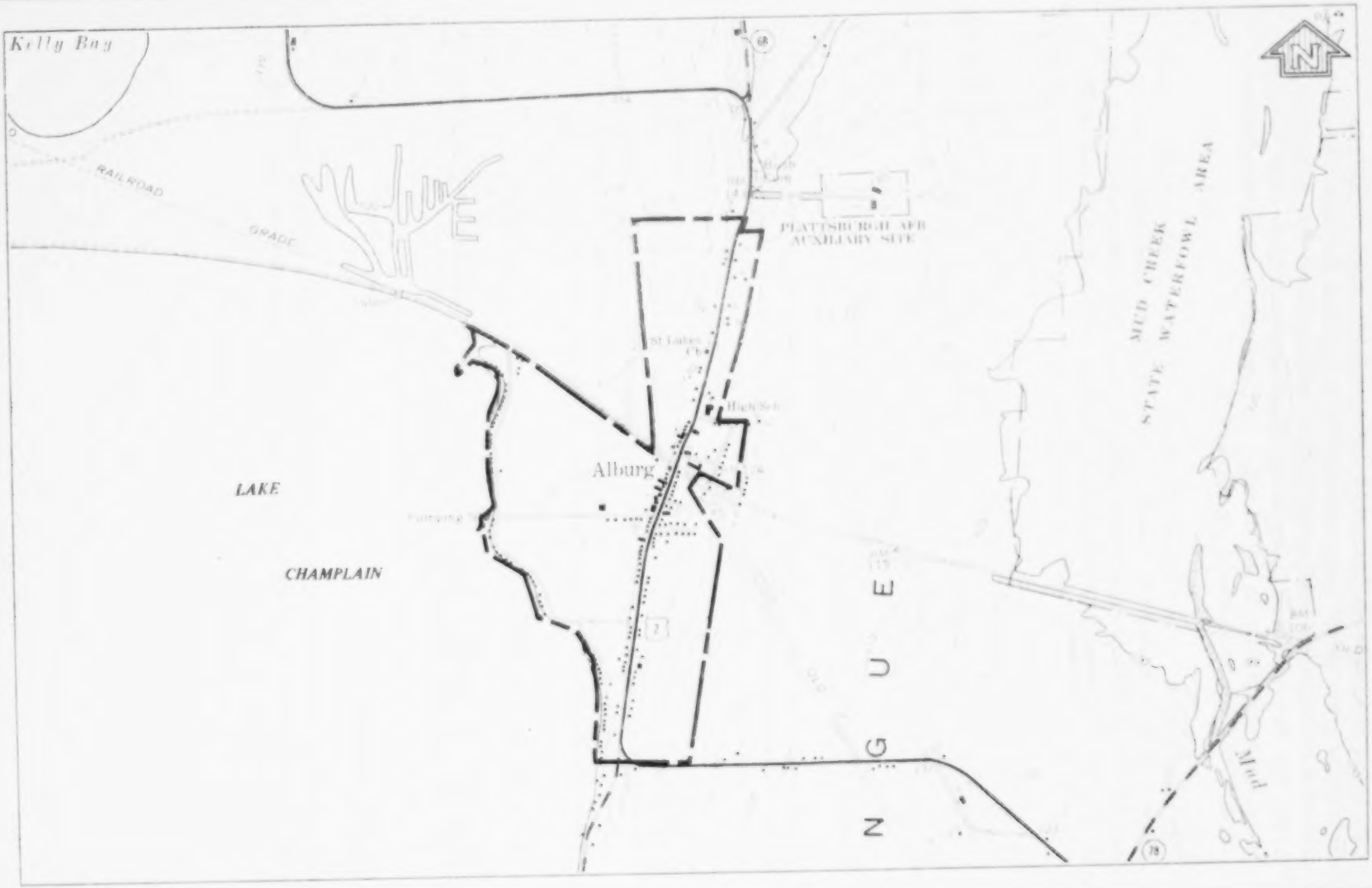

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration

VILLAGE OF ALBURG, VT
(GRAND ISLE CO.)

APPROXIMATE SCALE
2000 0 2000 4000 6000 FEET

VICINITY MAP

protected from most northeasters and tropical storms. The prevailing surface winds are generally from the south, with frequent shifts to the north during the winter. Winter snows are relatively light for Vermont, averaging 60 to 70 inches annually. The average annual precipitation is 33 inches. The average annual temperature is 46.3 degrees Fahrenheit (Reference 2).

Topography within the village is fairly uniform, with gently rolling hills reaching a maximum elevation of 180 feet. The region is underlain by shale, slate, and limestone of the Ordovician age. The soils in Alburg are primarily derived from silt and clay deposited in post-glacial Lake Vermont (Reference 3).

Grand Isle County has some of the best agricultural land in the State of Vermont, and agriculture is the most important enterprise in Alburg. A large portion of the cropland is used to grow corn and hay in support of dairy farming, and there are several apple orchards close to Lake Champlain (Reference 3).

2.3 Principal Flood Problems

Flood damage in the Village of Alburg has been caused primarily by high levels on Lake Champlain and the consequent erosion of the bank along the shore. Extremely high lake stages recorded in April and May of 1971, 1972 and 1976 resulted in flooding of some lake shore properties within the Village of Alburg. The 1976 flood had an estimated 25-year return period. The rise in lake level is often the result of sudden snowmelt in the mountains, and the enormous volume of water released from the mountainous and large (8,277 square miles) drainage area of Lake Champlain.

2.4 Flood Protection Measures

There were no flood control structures existing or authorized that would affect the Village of Alburg at the time of this study.

3.0 ENGINEERING METHODS

For the flooding source studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood

hazard data required for this study. Floods having recurrence intervals of 10, 50, 100, and 500 years have been selected as having special significance for flood plain management and for flood insurance premium rates. The analyses reported here reflect current conditions in the watershed of the flooding source.

3.1 Hydrologic and Hydraulic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for the flooding source studied in detail in the community.

Analyses of the levels of Lake Champlain at the Village of Alburg were adopted from the Flood Insurance Study for the City of Plattsburgh and the Regulation of Lake Champlain and the Upper Richelieu River prepared by the International Champlain Richelieu Board (References 4 and 5). Data used in this study were obtained from gaging stations at Rouses Point, New York, and Burlington, Vermont (Reference 4). A summary of elevation-frequency relationships for Lake Champlain is shown in Table 1, "Summary of Elevations".

TABLE 1 - SUMMARY OF ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (feet) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
LAKE CHAMPLAIN				
Village of Alburg	101.2	101.9	102.0	102.3

The ultimate water levels on Lake Champlain can be raised by adding the dynamic effect of wind-generated waves and runup. For purposes of providing information necessary to permit the assessment of flood hazards and flood plain management, the FIA approves the use of the water levels determined by hydrologic methods (not those caused by wave runup).

All elevations used in this study are referenced to the National Geodetic Vertical Datum of 1929 (NGVD), formerly referred to as Sea Level Datum of 1929. Locations of the elevation reference marks used in the study are shown on the maps.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

A prime purpose of the National Flood Insurance Program is to encourage state and local governments to adopt sound flood plain management programs. Each Flood Insurance Study, therefore, includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the FIA as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. The 100- and 500-year boundaries were delineated using topographic maps of the study area enlarged to a scale of 1:2,400, with a contour interval of 10 feet (Reference 6). In cases where the 100- and 500-year flood boundaries are close together, only the 100-year boundary has been shown.

Flood boundaries are indicated on the Flood Insurance Rate Map. On this map, the 100-year flood boundary corresponds to the boundary of the areas of special flood hazards (Zone A2), and the 500-year flood boundary corresponds to the boundary of areas of moderate flood hazards (Zone B).

Small areas within the flood boundaries may lie above the flood elevations and, therefore, may not be subject to flooding. Owing to limitations of the map scale and lack of detailed topographic data, such areas are not shown.

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the FIA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHFs), and flood insurance zone designations for the flooding source affecting the Village of Alburg.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses or waterbodies having relatively the same flood hazard. In lacustrine areas, reaches are

limited to the distance for which the 100-year flood elevation does not vary more than 1.0 foot. Using these criteria, the western shore qualifies as one reach whose flooding source is Lake Champlain. The location of this reach is shown on the Flood Insurance Rate Map.

5.2 Flood Hazard Factors

The FHF is the FIA device used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their FHFs are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest 0.5 foot, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs, the entire incorporated area of the Village of Alburg was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A2:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to FHF.
Zone B:	Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; also, areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Lake Champlain Reach 1	01	-0.8	-0.1	+0.3	010	A2	102

[1]Flood Insurance Rate Map Panel
[2]Weighted average
[3]Rounded to the nearest foot - see map

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration

VILLAGE OF ALBURG, VT
(GRAND ISLE CO.)

FLOOD INSURANCE ZONE DATA

LAKE CHAMPLAIN

Zone C: Areas of minimal flooding.

Table 2, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding source studied in detail in the village.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Village of Alburg is, for insurance purposes, the principal result of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the FIA.

6.0 OTHER STUDIES

The analyses of flood elevations for this study were adopted from the City of Plattsburgh, New York, Flood Insurance Study and a technical report prepared by the International Champlain Richelieu Board (References 4 and 5).

Flood Insurance Studies are underway for the Town of Alburg, which surrounds the village, and for the Towns of Swanton and North Hero, Alburg's neighbors to the east and south, respectively (References 7, 8 and 9). The data used in these studies were coordinated to assure agreement of results across municipal boundaries.

This study is authoritative for purposes of the Flood Insurance Program, and the data presented here either supersede or are compatible with previous determinations.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the office of the Insurance and Mitigation Division of the Federal Emergency Management Agency, Regional Director, Region III Office, Curtis Building, Sixth and Walnut Streets, Philadelphia, Pennsylvania 19106.

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